

U.S. Department of Commerce, Patent and Trademark Office				Atty Docket No.		Serial No.	
				M-9455 US		Unknown	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Applicants		PRO	
(Use several sheets if necessary)				Holden, et al.		S	
				Filing Date		Group	
				Herewith		C931 U.S. PRO	
U.S. Patent Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	AA	RE 34,783	11/8/94	Coates	250	372	
	AB	4,672,196	6/9/87	Canino	250	225	
	AC	5,045, 704	9/3/91	Coates	250	372	
	AD	5,607,800	3/4/97	Ziger	430	8	
	AE	5,739,909	4/14/98	Blayo et al.	356	369	
	AF	5,747,813	5/5/98	Norton et al.	250	372	
	AG	5,841,139	11/24/98	Sostek et al.	250	339	
	AH						
	AI						
	AJ						
	AK						
Foreign Patent Documents							
		Document	Date	Country	Class	Subclass	Translation
	AL	WO 99/45340	9/10/99	PCT	G01B	11/02	X
	AM	JP 11211421	8/6/99	Japan	G01B	11/02	Abstract
	AN	JP 11211422	8/6/99	Japan	G01B	11/02	Abstract
	AO						
	AP						
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AQ	Corle, et al., "Polarization-enhanced imaging of photoresist gratings in the real-time scanning optical microscope", Applied Optics, Vol. 33, No. 4, pages 670-677 (February 1, 1994).					
	AR	Hauge, "Recent Developments in Instrumentation in Ellipsoetry", Surface Science 96, pages 108-140 (1980).					
	AS						
Examiner			Date Considered	Feb 14, 2002			

***EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.



Sheet 1 of 2

U.S. Patent & Trademark Office		RECEIVED	Atty Docket No.	Serial No.
		APR - 9 2001	M-9455 US	09/670,000
INFORMATION DISCLOSURE STATEMENT BY APPLICANT			Applicants	
(Use several sheets if necessary)		XG 2800 MAIL ROOM	James M. Holden et al.	
			Filing Date	Group
			September 25, 2000	Unknown

U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
<i>ER</i>	AA	4,141,780	Feb. 27, 1979	Kleinknecht et al.	156	626	—
<i>ER</i>	AB	4,172,664	Oct. 30, 1979	Charsky et al.	356	356	—
<i>ER</i>	AC	4,408,884	Oct. 11, 1983	Kleinknecht et al.	356	355	—
<i>ER</i>	AD	4,593,368	Jun. 3, 1986	Fridge et al.	364	525	—
<i>ER</i>	AE	4,707,610	Nov. 17, 1987	Lindow et al.	250	560	—
<i>ER</i>	AF	4,748,335	May 31, 1988	Lindow et al.	250	572	—

Foreign Patent Documents

		Document	Date	Country	Class	Subclass	Translation	Yes	No
<i>ER</i> ✓	AG	EP 1 037 012 A1	9/20/00	Europe	—	—			✗
<i>ER</i> ✓	AH	EP 0 402 191 A1	12/12/90	Europe	—	—	Claims	✗	

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

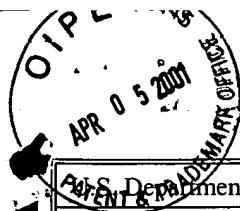
<i>ER</i> ✓	AI	Davidson, M. et al., "A comparison between rigorous light scattering methods", <i>SPIE</i> Vol. 3051 (1997) Pages 606-619.
<i>ER</i> ✓	AJ	Galarza, C. et al., "Real-time Estimation of Patterned Wafer Parameters Using <i>In Situ</i> Spectroscopic Ellipsometry", <i>Proceedings of the IEEE</i> (1999) Pages 773-778.
<i>ER</i> ✓	AK	Haverlag, M. et al., "In situ ellipsometry and reflectometry during etching of patterned surfaces: Experiments and simulations", <i>Journal of Vacuum Science & Technology B</i> , Volume 10 (1992) Pages 2412-2418.
<i>ER</i> ✓	AL	Heimann, P. et al., "Optical Etch-Rate Monitoring: Computer Simulation of Reflectance", <i>Electrochemical Society Active Member</i> , Volume 131 (1984) Pages 881-885.
<i>ER</i> ✓	AM	Krukar, R. et al., "Reactive ion etching profile and depth characterization using statistical and neural network analysis of light scattering data", <i>J. Appl. Phys.</i> , Vol. 74 (1993) Pages 3698-3706.
<i>ER</i> ✓	AN	Lee, M. et al., "Analysis of Reflectometry and Ellipsometry Data from Patterned Structures", <i>Characterization and Metrology for ULSI Technology</i> , (1998) Pages 331-334.
<i>ER</i> ✓	AO	Marx, D. et al., "Polarization quadrature measurement of subwavelength diffracting structures", <i>Applied Optics</i> , Vol. 36 (1997), Pages 6434-6440.

Examiner *ER*

Date Considered

Feb 14, 2002

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Sheet 2 of 2

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT			Applicants	
(Use several sheets if necessary)			James M. Holden et al.	
			Filing Date	Group
			September 25, 2000	Unknown

U.S. Patent Documents

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✓	AA	5,042,949	Aug. 27, 1991	Greenberg et al.	356	345	—
✓	AB	5,164,790	Nov. 17, 1992	McNeil et al.	356	355	—
✓	AC	5,363,171	Nov. 8, 1994	Mack	355	68	—
✓	AD	5,739,909	Apr. 14, 1998	Blayo et al.	356	369	—
✓	AE	5,963,329	Oct. 5, 1999	Conrad et al.	356	372	—
	AF						

Foreign Patent Documents

Translation

		Document	Date	Country	Class	Subclass	Yes	No
✓	✓	AG EP 0 601 580 A1	6/15/94	Europe	—	—		✗
	AH							

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

✓ ✓	AI	Mills, D. et al., "Spectral ellipsometry on patterned wafers," <i>SPIE</i> , Vol. 2637 (1995) Pages 194-203.
✓	AJ	Moharam, M. et al., "Diffraction analysis of dielectric surface-relief gratings", <i>J. Opt. Soc. Am.</i> , Vol. 72 (1982) Pages 1385-1392.
✓	AK	Moharam, M. et al., "Formulation for stable and efficient implementation of the rigorous coupled-wave analysis of binary gratings", <i>J. Opt. Soc. Am.</i> , Vol. 12 (1995) Pages 1068-1076.
✓	AL	Moharam, M. et al., "Rigorous coupled-wave analysis of planar-grating diffraction", <i>J. Opt. Soc. Am.</i> , Vol. 71 (1981) Pages 811-818.
✓	AM	Moharam, M. et al., "Stable implementation of the rigorous coupled-wave analysis for surface-relief gratings: enhanced transmittance matrix approach", <i>J. Opt. Soc Am.</i> , Vol. 12 (1995) Pages 1077-1086.
✓	AN	Naqvi, S. et al., "Linewidth measurement of gratings on photomasks: a simple technique", <i>Applied Optics</i> , Vol. 31 (1992) Pages 1377-1384.
✓ ✓	AO	Ziger, D. et al., "Linesize effects on ultraviolet reflectance spectra"

Examiner *[Signature]* Date Considered *Feb 14, 2002*

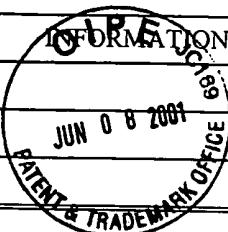
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(Use several sheets if necessary)				James M. Holden et al.				
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<i>AK</i>	AA	4,582,389	Apr. 15, 1986	Wood et al.	350	3.69	—	
	AB	5,007,708	Apr. 16, 1991	Gaylord et al.	350	162.2	—	
	AC	5,035,770	Jul. 30, 1991	Braun	156	643	—	
	AD	5,191,216	Mar. 2, 1993	Henderson et al.	257	28	—	
	AE	5,216,680	Jun. 1, 1993	Magnusson et al.	372	20	—	
	AF	5,337,146	Aug. 9, 1994	Azzam	356	367	—	
	AG	5,349,440	Sep. 20, 1994	DeGroot	356	349	—	
Foreign Patent Documents								
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<i>AK</i>	AH	59-225038	Dec. 18, 1984	Japan	—	—	Abstract	<input checked="" type="checkbox"/>
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	AJ							
	AK							
	AL							
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)								
<i>AK</i>	AM	Bao, G. et al., "Mathematical studies in rigorous grating theory", <i>J. Opt. Soc. Am. A</i> , Vol. 12 (1995), Pages 1029-1042.						
	AN	Bao, G. et al., "Modeling and Optimal Design of Diffractive Optical Structures", Pages 1-27.						
	AO	Benson, T. et al., "In-situ Spectroscopic Reflectometry for Polycrystalline Silicon Thin Film Etch Rate Determination During Reactive Ion Etching", Pages 1-34.						
	AP	Bosenberg, W. et al., "Linewidth Measurement on IC Wafers by Diffraction from Grating Test Patterns", <i>Solid State Technology</i> (1983) Pages 79-85.						
<i>AK</i>	AQ	Chateau, N. et al., "Algorithm for the rigorous coupled-wave analysis of grating diffraction," <i>J. Opt. Soc. Am. A</i> , Vol. 11 (1994), Pages 1321-1331.						
Examiner <i>AK</i>	Date Considered		Feb 14, 2002					
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AH							
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
AM	Coulombe, S. et al., "Ellipsometric-Scatterometry for sub-01. μ m CD measurements" SPIE Vol. 3332 (1988) Pages 282-292.						
AN	Damar, H. et al., "Diffraction Characterization for Process Monitoring, Linewidth Measurement and Alignment" SPIE Vol. 470 (1984) Pages 157-163.						
AO	Gaylord, T. et al., "Analysis and Applications of Optical Diffraction by Gratings," Proceedings of the IEEE, Vol. 73, (1984), Pages 894-937 (1985).						
AP	Giapis, K. et al., "Use of Light Scattering in Characterizing Reactively Ion Etched Profiles", J. Vac. Sci. Technol. A, Vol. 9 (1981), Pages 664-668.						
AQ	Glytsis, E. et al., "Rigorous Coupled-Wave Analysis And Applications Of Grating Diffraction", Critical Reviews Of Optical Science and Technology, Vol. CR49 (1993), Pages 1-31.						
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		M-9455 US	09/670,000				
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>OPT</i> <i>JUN 08 2001</i> <i>PATENT & TRADEMARK OFFICE</i>		Applicants					
(Use several sheets if necessary)		James M. Holden et al.					
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U.S. Patent Documents							
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Foreign Patent Documents				<i>SEARCHED</i> <i>INDEXED</i> <i>MAILED</i> <i>2000</i>			
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AH							
AI							
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
<i>✓</i>	AM	Glytsis, E. et al., "Three-dimensional (vector) rigorous coupled-wave analysis of anisotropic grating diffraction", <i>J. Opt. Soc. Am. A</i> , Vol. 7 (1990), Pages 1399-1420.					
<i>✓</i>	AN	Kleinknecht, H. et al., "Linewidth measurement on IC masks and wafers by grating test patterns", <i>Applied Optics</i> , Vol. 19 (1980) Pages 525-533.					
<i>✓</i>	AO	Kong, W. et al., "Analysis of Time-Evolved Spectroscopic Ellipsometry Data from Patterned Structures for Etching Process Monitoring and Control", Four pages.					
<i>✓</i>	AP	Moharam, M., "Coupled-Wave Analysis of Two-Dimensional Dielectric Gratings", <i>SPIE</i> Vol. 883 (1988) Pages 8-11.					
<i>✓</i>	AQ	Moharam, M. et al., "Three-dimensional vector coupled-wave analysis of planar-grating diffraction", <i>J. Opt. Soc. Am.</i> , Vol. 73 (1983), Pages 1105-1112.					
Examiner <i>✓</i>		Date Considered <i>Feb 14, 2002</i>					
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Foreign Patent Documents

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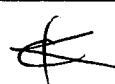
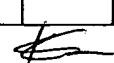
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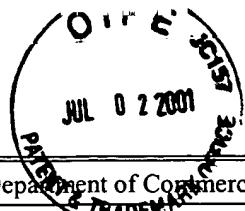
✓	AM	Press, W. et al., "Numerical Recipes: The Art of Scientific Computing," <i>Cambridge University Press</i> , Section 14.4 (1986), Pages 521-528.
✓	AN	Tadros, K., "Understanding metrology of polysilicon gates through reflectance measurement and simulation", <i>SPIE</i> Vol. 1464 (1991) Pages 177-186.
	AO	Tu, K. et al., "Multiple-scattering theory of wave diffraction by superposed volume gratings", <i>J. Opt. Soc. Am. A.</i> , Vol. 7 (1990), Pages 1421-1435.
✓	AP	"A Diffraction Grating Analysis Tool", downloaded 5/7/2001 from < http://www.gsolver.com/gsprod.html >, Grating Solve Development Co. (1999).
	AQ	

Examiner

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(Use several sheets if necessary)				James M. Holden et al.				
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)								
	AQ	Brauer, R. et al., "Electromagnetic diffraction analysis of two-dimensional gratings", <i>Elsevier Science Publishers</i> (1993) Pages 1-5.						
	AR	Han, S. et al., "Electromagnetic scattering of two-dimensional surface-relief dielectric grating", <i>Applied Optics</i> , Vol. 31 (1992) Pages 2343-2352.						
	AS							
Examiner 		Date Considered	2/14/02					
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				September 25, 2000	Unknown			
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*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
<i>ES</i>	AA	6,031,614	Feb. 29, 2000	Michaelis et al.	356	369	_____	
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	AL							
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)								
	AQ	Huang, H. et al., "Normal-incidence spectroscopic ellipsometry for critical dimension monitoring", <i>Applied Physics Letters</i> , Vol. 78 (2001) Pages 3983-3985.						
	AR	Sun, J. et al., "Profile Measurement on IC Wafers by Holographic Interference", <i>SPIE</i> Vol. 673 (1986) Pages 135-143.						
	AS							
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				M-9455 US	097670,000			
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(Use several sheets if necessary)				James M. Holden et al.				
				Filing Date	Group			
				September 25, 2000	2878			
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OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)								
<i>AK</i>	AQ	Krukar, R. et al., "Overlay and Grating Line Shape Metrology Using Optical Scatterometry (unclassified) DARPA I 1993 Final Report.						
<i>AS</i>	AR	McNeill, J. et al., "Scatterometry Applied to Microelectronics Processing" <i>Microlithography World</i> (1992) Pages 16-22.						
Examiner <i>AK</i>		Date Considered <i>Feb 14, 2002</i>						
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